

tongue free and deeply notched behind.

Forelimbs moderately long and slender; fingers free with prominent rounded tips; first finger shorter than second.

Hindlimbs fairly long; tibiotarsal articulation reaching nostrils; heels just meeting when hind limbs folded at right angles to body; tibia half the length from tip of snout to vent and three to four times as long as broad; fourth toe longest, longer than snout and with prominent discs; discs of toes broader than long; more than two-third webbed, two distal phalanges of fourth toe free; subarticular tubercles not prominent; both inner and outer metatarsal tubercles absent.

Measurements : See table 1.

Holotype : Adult female, Regd. Z.S.I. (K.Z. 313) collected from Hornbill, Namdapha Tiger Reserve and proposed Biosphere Reserve, Arunachal Pradesh; 13. xii. 1983, coll. S. Biswas.

Paratypes : Four adult males, Regd. Z.S.I. (K.Z. 314-317), collected from Hornbill, Namdapha Tiger Reserve and proposed Biosphere Reserve, Arunachal Pradesh, 13. xii. 1983, coll. S. Biswas.

The species is named after Dr. Shyamrup Biswas, who led the survey team to the area.

Comparisons: Eight species of the genus *Philautus* Gistel, have been described from north-east India, namely *Philautus argus* (Annandale), *P. annandalii* (Boulenger), *P. andersoni* (Ahl), *P. cherrapunjiae* (Roonwal & Kripalani), *P. garo* (Boulenger), *P. kempiae* (Boulenger), *P. nam-*

daphaensis (Sarkar & Sanyal), and *P. shillongensis* Pillai & Chanda. Of these, the present species appears close to *P. argus*, but can be distinguished from it in having toes that are not fully webbed; (fully webbed in *argus*); indistinct subarticular tubercles (subarticular tubercles distinct in *argus*) and head as long as broad (head longer than broad in *argus*). Moreover, when compared with all the species of the genus *Philautus* from the Indo-Australian Archipelago, the present species revealed some affinities with *P. aurifasciatus* (Schlegel), described from Java, but can be distinguished from it in having a much larger tympanum which is more than half the diameter of eye (one-third to nearly half in *aurifasciatus*), nostrils much closer to tip of snout than eyes (nostrils equidistant from eyes and tip of snout in *aurifasciatus*) and absence of inner metatarsal tubercle (inner metatarsal tubercle present in *aurifasciatus*). A combination of four characters, namely smooth skin, nearly fully webbed toes, indistinct subarticular tubercles and absence of both inner and outer metatarsal tubercles distinguishes *Philautus shyamrupus* from both *Philautus argus* and *Philautus aurifasciatus*.

ACKNOWLEDGEMENTS

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A NEW SPECIES OF *PINNOTHERES* LATREILLE (DECAPODA: BRACHYURA) FROM VISAKHAPATNAM COAST OF BAY OF BENGAL, ANDHRA PRADESH¹

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(With eight text-figures)

A new species of the genus *Pinnotheres* Latreille is described from Visakhapatnam. The new species *Pinnotheres hanumantharaoi* is related to *P. pectinicola* Burger. The differences between *P. pectinicola* Burger and *P. hanumantharaoi* are also given.

INTRODUCTION

The diagnostic characters of the genus *Pin-*

notheres Latreille were given by Miers (1886) and Alcock (1900). Burger (1895) described about 30 new species of *Pinnotheres* and gave a key. Later Rathbun (1910) examined the *Pinnotheres* of the Gulf of Siam and added 7 new species. Tesch (1918) enumerated 65 Indo-Pacific species of *Pinnotheres* inhabiting the mantle cavity of Lamellibranchs and

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also provided a key to the species. Hornell & Southwell (1909) furnished a list of species of *Pinnotheres* with their respective hosts and localities where they occur. Description for a new species of *Pinnotheres placunae* which lives in *Placuna placenta* from Okha was furnished. Chhappgar (1957) described a new species of *Pinnotheres*, *P. vicajii* collected from the bivalve *Paphia malabarica* at Bombay. Another new species of *Pinnotheres*, *P. sanguinolaria* obtained from the mantle cavity of *Sanguinolaria diphos* inhabiting shallow waters of Travancore was described by Krishna Pillai (1951).

DESCRIPTION

Tribe	:	CATOMETOPA
Family	:	PINNOTHERIDAE
Subfamily	:	PINNOTHERINAE
Genus	:	<i>Pinnotheres</i> Latreille

Pinnotheres hanumantharaoi sp. nov.

Type: *Holotype*, berried female 10 mm broad and 9 mm long.

Walking legs: see Table 1.

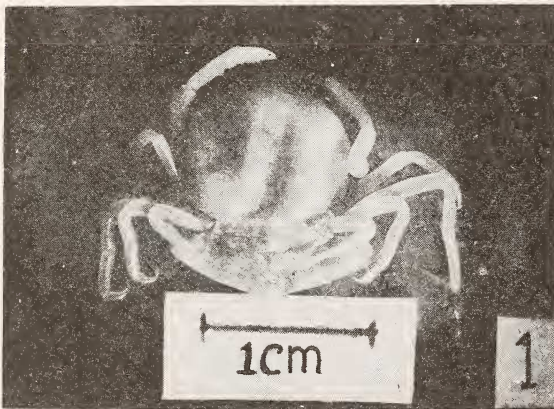
Paratypes:

- (1) female 14 mm broad, 13 mm long;
- (2) berried female 9 mm broad, 8 mm long;
- (3) female 9 mm broad, 8 mm long;
- (4) berried female 8 mm broad, 7 mm long;
- (5) berried female 10 mm broad, 9 mm long.

Average measurement: 9 mm broad and 8 mm long

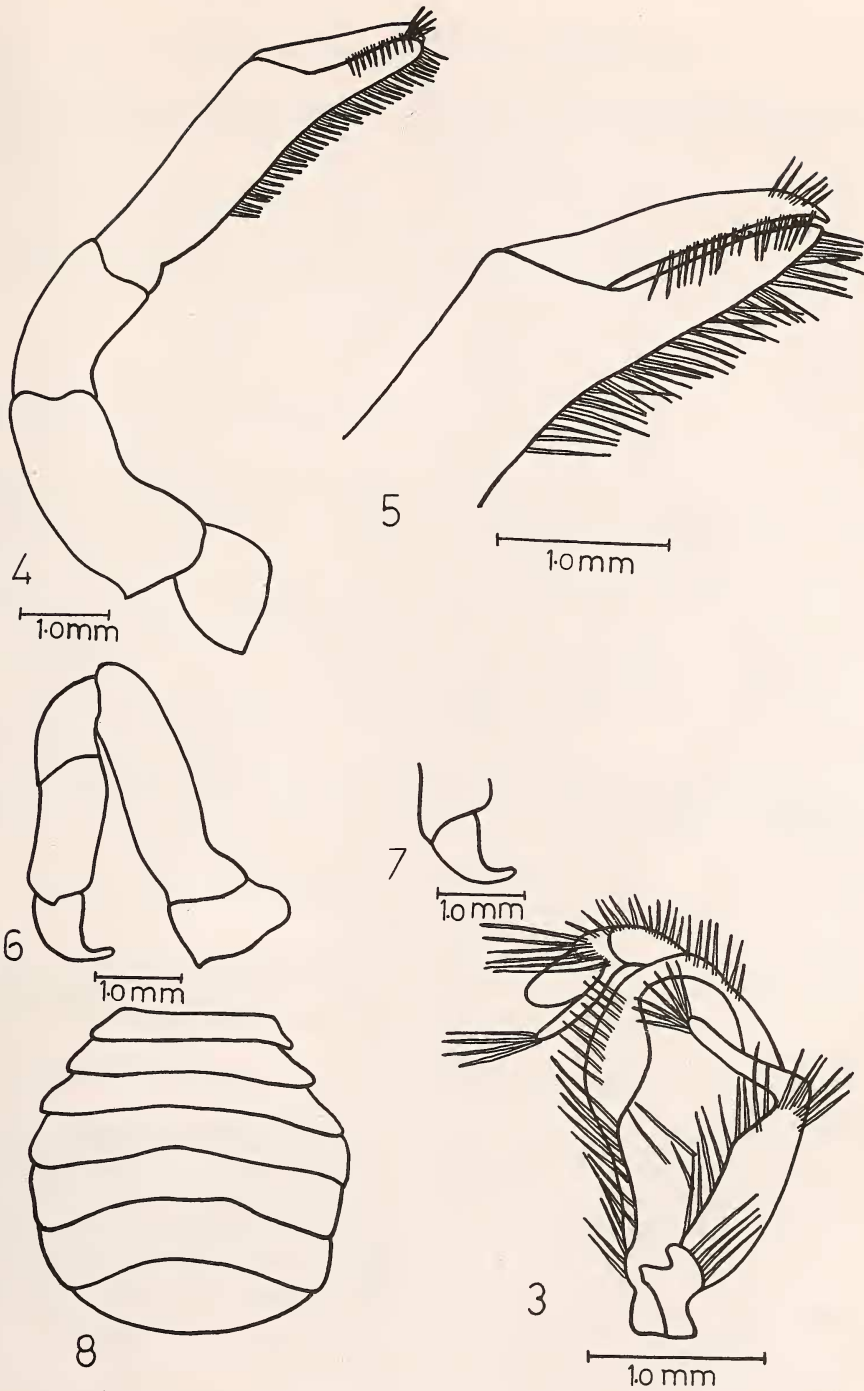
Collected from offshore fishing station, Visakhapatnam, during 1979-80. They were obtained from the mantle cavity of *Pecten pleuronectes* Lamarck. 110 shells of *Pecten pleuronectes* were opened and only 20 female *Pinnotheres* could be collected. No males were ever found and it can be presumed that they are free living. The holotype and paratypes are now in the Zoology Museum of Andhra University, Waltair. They will be deposited in the museum of Zoological Survey of India, Calcutta.

Carapace brown, subcircular, convex especially towards the middle region, regions indistinct. Carapace is smooth, completely naked without sculpture and membranous. Front is $\frac{2}{5}$ of the breadth of the Carapace, slightly thickened and not prominent (Figs. 1 & 2). Eyes are not visible from above and are pale brown in colour. The external maxillipeds are conspicuous but covered by the seventh segment of abdomen. Merus-ischium of the external maxilliped is broad and its outer border much curved. Along the inner border of merus-ischium long hairs are implanted. The distal end of its outer border also bears long hairs. Palp of the external maxilliped is three-jointed. Carpus is shorter than the propodus. The Dactylus is inserted on the inner side of the propodus. Dactylus is narrow, styliform, reaching a little beyond the rounded distal end of the propodus; it carries a few long hairs at its tip. The outer border of carpus is curved and also lined by hairs. Exopodite is conspicuous, shorter than merus-ischium and the tip carries a



Pinnotheres hanumantharaoi sp. nov.

Fig. 1. Dorsal view; 2. Ventral view.



Pinnotheres hanumantharaoi sp. nov.

Fig. 3. Third maxilliped (right); 4. Right chelate leg; 5. Fingers of the right chelate leg; 6. Right fourth walking leg; 7. Dactylus of right fourth walking leg; 8. Abdomen.

TABLE I
WALKING LEGS OF HOLOTYPE OF *P. hanumantharaoi* SP. NOV

	Merus	Carpus	Propodus	Dactylus	Total
<i>Right:</i>					
Length of 1st leg	3	2	2	2	9 mm
Length of 2nd leg	5	4	3	3	15 mm
Length of 3rd leg	3	2	2	2	9 mm
Length of 4th leg	3	2	2	2	9 mm
Chelate leg	Arm 3	Wrist 2	Hand 4	Fingers 2	11 mm
<i>Left:</i>					
Length of 1st leg	3	2	2	2	9 mm
Length of 2nd leg	4	3	3	2	12 mm
Length of 3rd leg	3	2	2	2	9 mm
Length of 4th leg	3	2	2	2	9 mm
Chelate leg	Arm 3	Wrist 2	Hand 4	Fingers 2	11 mm

few (6 to 8) long hairs (Fig. 3). Chelipeds stouter than the walking legs. The arm, wrist and outer-border of hand smooth and devoid of armature, the hand twice as long as fingers; fingers thick, tip of the movable finger curved, posterior border of the distal half of the hand and entire posterior border of immovable finger bears hairs. The posterior two-thirds border of movable finger also carries hairs, a few hairs also near its tip (Figs. 4 & 5). Small teeth are seen at the distal part of the immovable finger.

The walking legs slender, completely naked, second pair of legs the longest, first, third and last pair of legs equal in length, the dactyli of legs except the second pair equal in length, the dactyli of the first, third and last pairs of legs as long as their propodites, the dactyli of last two pairs of legs as broad as the propodites except the tips which are narrow and incurved as hooks. The dactyli of first and second pairs of legs more slender than their propodites and curved like hooks, the dactyli of second pair longer than the dactyli of remaining walking legs (Figs. 6 & 7).

Abdomen seven-segmented, broad covering the bases of the legs, light brown, and naked without any armature (Fig. 8). Eggs numerous, brown in colour, measuring 0.264 mm in diameter.

DISCUSSION

Pinnotheres hanumantharaoi sp. nov.

resembles *P. pectinicola* Burger to some extent. In the key given by Burger, *P. pectinicola* comes under section I, group A which is characterised by the dactylus of second gnathopod being inserted on the inner corner of the propodus and extending slightly beyond it, and a rectangular carapace. The differences between *P. pectinicola* Burger and the present species are summarised here

The resemblances are (1) legs slender, naked, (2) tips of the dactyli of legs curved inwards, (3) the dactylus of third maxilliped extends beyond propodus, (4) dactylus of third maxilliped inserted on inner margin of propodus.

Nobili (1906) also gave a key to the species of *Pinnotheres* and described *P. pectinicola* Burger.

From the above points it is evident that it differs from *P. pectinicola* Burger and these differences are sufficient to separate it as a new species.

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P. hanumantharaoi sp. nov.*P. Pecinicola* Burger

1. Host-Pecten pleuronectes.
2. Breadth and length of carapace 10 & 9 mm respectively
3. Carapace subcircular, convex
4. Eyes pale brown
5. Fingers of chelipeds half the length of hand
6. Second pair of walking legs longer than remaining pairs
7. All segments of walking not of equal length.
8. Hairs present along with inner border of merusischium and outer border of carpus of third maxilliped.

- Host-Pecten radula.
 Breadth and length of carapace 8 & 7 mm respectively.
 Carapace almost rectangular, more or less flat.
 Eyes lack pigment.
 Fingers of chelipeds as long as those of hand.
 Middle two pairs of walking legs longer than others.
 All segments of walking legs of equal length.
 In the diagram given by Burger (1985), hairs are not seen on inner border of merusischium and outer border of carpus.

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ON SOME RARE SPIDERS OF THE FAMILY ZODARIIDAE (ARANEAE : ARACHNIDA) FROM COASTAL ANDHRA PRADESH, INDIA¹

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(With two text-figures)

The family Zodariidae, genus *Storena* and *S. gujaratensis* Tikader and Patel and *S. indica* Tikader and Patel are recorded for the first time from Coastal Andhra Pradesh. Two new species *S. arakuensis* and *S. tikaderi* are described and illustrated.

INTRODUCTION

The spiders of the family Zodariidae are very little known from India. Simon (1893) first recorded the family from Indian sub-continent. Later Pocock (1901), Simon (1905, 1906), Gravely (1921) and Reimoser (1934) described few more species of the family from India. Recently Tikader and Patel (1975) and Tikader and Malhotra (1976) described some new species of the genera *Storena* and *Lutica*

from India. In all sixteen species belonging to seven genera are known from our country.

While examining the spider collections from Coastal Andhra Pradesh, we came across four species of spiders of this family, out of which two are the new species which are described in this paper. The family, genus *Storena* and *S. gujaratensis* and *S. indica* are all recorded for the first time from Coastal Andhra Pradesh. These spiders are found under stones or dead leaves on the ground.

All the type specimens will in due course be deposited in the National Collections, Zoological Survey of India, Calcutta.

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